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ABSTRACT

An analysis of the structure and functioning of Modern Greek gerundival constructions is presented. First, it is argued that there are clear differences between gerunds and participles. Issues concerning the temporal interpretation of gerunds are considered, and an account is given that postulates the existence of a covert temporal operator like one used for temporal prepositions in English, whose movement determines the clause with which the gerund will be associated. A theory of adjunction that does not distinguish configurationally between adjunct phrases and specifiers is assumed, to avoid potential violation of the adjunct constraint. An examination of control issues with gerunds concludes that although apparently restricted to adjoined positions, gerunds can also be arguments, and by virtue of their indefinite nature, permit exceptional case marking. It is concluded that this evidence supports the Definite/Indefinite distinction at the clausal level. Contains 42 references. (MSE)

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NOTES ON TEMPORAL INTERPRETATION AND CONTROL IN MODERN GREEK GERUNDS*

George Tsoulas

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NOTES ON TEMPORAL INTERPRETATION AND CONTROL IN MODERN GREEK GERUNDS*

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1. Introduction

In this paper I would like to examine some aspects of the syntax of the Modern Greek gerund clauses. This study will mainly focus on the following aspects of the syntax of these clausal constituents:

(i) Their External and Internal Syntax
(ii) Temporal Interpretation of Gerund clauses
(iii) Their Argument status
(iv) Control in Gerunds

As a starting point in this paper we adopt the commonly held view that gerund clauses are never arguments but only adjunct modifiers. Our account of their temporal interpretation relies on recent theories of adjunction under which the configurational difference between adjuncts

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and specifiers vanishes. Furthermore, we provide arguments from ECM constructions, imperatives and topicalisation in favour of the claim that gerund clauses can also be arguments. This in turn leads us to a principled account of the puzzling control patterns found in gerund clauses.

2. An Overview of the Issues

Consider the following Modern Greek sentences:

(1) I Maria$_i$ ide to Gianni$_j$ [$_{CP}$ PRO*$_{i/j}$ zografizondas ena dendro].
The Maria saw the Gianni painting a tree
Maria saw Gianni while he was painting a tree.

(2) I Maria$_i$ ide to Gianni$_j$ [$_{CP}$ PRO$_i$/*$_j$ zografizondas to dendro].
The Maria saw the Gianni painting the tree
Maria saw Gianni while she was painting the tree.

Under currently quite standard assumptions concerning the nature and the sites of adjunction (Chomsky 1989, 1992, 1993; Kayne 1994) one may suppose that there is no significant structural difference in the syntax of sentences (1) and (2). As the indexing indicates however there is a difference in so far as the controller of the PRO is concerned. The only observable difference in the two sentences is the nature of the object of the verbal form *zografizondas*: in (1) the object of this verb[1] is an indefinite DP, and in (2) it is a definite DP.

Notice also that in a sentence like (3), in which (2) is embedded under the verb *Akousa* 'I heard', the controller cannot be the subject of the main clause (*pro* with first person features).

(3) Akousa oti i Maria ide to Gianni zografizondas to dendro.
Heard/I that the M saw the G painting the tree

[1] Although the precise nature of this form remains to be determined we will use *verb* for the moment for convenience.

Bearing in mind that the gerund, as the glosses indicate, has a specific temporal interpretation, one question that we have to address is why in (3) the gerund clause cannot be associated with the matrix.

A further issue arising is whether the object *To Gianni*, which displays accusative Case, genuinely belongs to the matrix sentence or whether it is in fact the subject of the gerund clause which is Exceptionally Case Marked by the higher verb. In order to provide a satisfactory answer to this question one has to settle the issue of the argument status of the gerund clause.

As will become clear in the remainder of the paper the differences seen above in syntax and interpretation are due to the ambiguity of these forms, which can be either participles or gerunds. The paper is organised as follows. In the following section I present the distribution of gerund clauses. Then I examine their categorial status and their internal syntax, focusing principally on their temporal interpretation and several temporal scope ambiguities. In the last part I examine their argument status and modify the initial assumption that gerunds in Modern Greek are only adjunct modifiers. I conclude with a discussion of the control properties of gerunds.

3. The Modern Greek Gerund

In this section I want to investigate the properties of what has been frequently called a gerund in Modern Greek. This form is exemplified in (4).

(4) Pinondas to krasi
drinking the wine

This verbal form has not received much attention in the recent literature.[2] The question of what its precise nature is and its place

[2] Not only in recent years but also in the literature since the 1930s, to the best of my knowledge, this form received only a passing mention in the morphology section of reference grammars and other works. Its syntax has never really been seriously investigated, see for example Joseph and Philippaki-Warburton 1986, Householder, Kazazis and Koutsoudas 1964, Tzartzanos 1949, Seiler 1952, Mirambel 1939 among others.

within the Modern Greek verbal paradigm has not yet been clearly addressed. In fact whenever, in the literature, (4) is put under the heading *gerund*, it is only because of its apparent lack of agreement and tense features.[3] On the other hand, the fact that this form, historically, clearly derives from the active participle has led some researchers to classify it with participles. In this paper I will argue that this form is ambiguous in that in some cases it behaves as a participle, and in others more as a gerund. Two caveats are in order here. First, as will become apparent in the remainder of this paper, it would be misleading to understand by the term *gerund* the notoriously syntactically and semantically ambiguous English counterpart. Only one aspect of the function and distribution of the English gerund is displayed by the Modern Greek (4). Examples (8)-(11) are intended to show this.

Second, the participial uses of (4) are not on a par with the uses of clearly participial forms in Modern Greek: although the gerund can be considered a participle in so far as it restricts the possibilities of control, it still preserves other verbal properties whereas real participles do not.

Examples (5)-(11) cover essentially the distribution of the Modern Greek gerund.

(5) **Pinondas** to krasi o Giannis kapnize.
drinking the wine the Giannis was smoking
Giannis was smoking while he was drinking the wine.

(6) O Kostas kimotan **kratondas** to molyvi tou.
The Kostas was sleeping holding the pen his
Kostas was sleeping holding his pen (with his pen in his hand).

(7) **Rixnondas** to potiri to espase.
dropping the glass it (S)he broke
She broke the glass by dropping it.

[3] With the notable exception of Householder, Kazazis and Koutsoudas 1964 who provide more evidence for such a claim (see below).

(8) * O Giannis ekseplagi apo to **telionondas** tou arthrou.
The G. was surprised by the finishing of the paper
Finishing the paper was a fact that surprised Giannis.

(9) * O Kostas pige **psarevondas.**[4]
The Kostas went fishing
Kostas went fishing.

(10) * (To) **telionondas** to arthro toso grigora mas ekseplikse.
(The) finishing the paper so quickly us surprised
Finishing the paper so quickly was a fact that surprised us.

(11) * O kostas zitise **arcizondas** mathimata pianou.
The Kostas asked starting lessons piano
Kostas asked to start taking up piano lessons.

It is clear from the above examples that gerundival clauses only appear as adjunct modifiers (5, 6, 7), they can never be subjects or objects of verbs or prepositions (8, 9, 10, 11); they can never occupy an A-position. They can however be adjoined to various sites depending on their meaning and in that respect they are parallel to adverbial modifiers. Thus, a manner gerund will be adjoined to VP, a temporal gerund is adjoined to IP and a modal even higher, as in (14).

(12) I Anna anisixise to Niko **fonazondas** voithia.
The Anna worried the Niko crying out help
Anna caused worry to Noko when (because) she cried out for help.

(13) I Anna **ftiaxnondas** kafe milai sto tilefono.
The Anna fixing coffee (she)speaks on the phone
Anna talks on the phone while she is making coffee.

[4] I leave aside here the idiomatic *pigeno girevondas* 'I am looking for trouble'.

(14) **Echondas** makria malia i Anna prepi na ta xtenizi sinechia.
Having long hair the A. must C them comb always
Having long hair Anna must comb it all the time.

This difference in the semantic interpretation as reflected by the syntax can be explained by a difference in intensionality. In (12) one may suppose that given that the contents of the VP have all moved higher to functional projections the gerund remains adjoined to the VP. In (13) the subject is outside the scope of the adjunct but the remainder of the VP is not. In (14) the gerund has in its scope something akin to the Σ Phrase of Laka (1990) which explains its modal interpretation.

2.1 External Distribution[5]

What I call here gerund has frequently been confused with participles and, consequently, it has been considered a 'nominal' form of the verb. However there is clear evidence that the gerund shares distribution with verbs. Gerunds are opposed to participles in that they can never be nominalised (see (15)), i.e. they can never be preceded by a determiner; they can only be modified by adverbs (see (16) and (17)); they do not compose with auxiliaries to form complex tenses (see (18)); and, in general, they only function as verbs. Participles, on the other hand have all the opposite properties, (except for the complex tenses[6]) as the following examples show.

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[5] I am interested here in the overall behaviour of the gerund and not in its precise morphological constitution. Due to space limitations I will not attempt here to analyse the function of the morpheme *-ondas* that forms the gerund. Historically, this morpheme comes from the accusative of the active participle of Ancient Greek (with the rather mysterious addition of the -s ending). I believe that this resemblance and historical affiliation is responsible for much of the confusion created among scholars as to the nature of the gerund. I leave a more detailed analysis of its morphological peculiarities for further research.

[6] Strictly speaking participles do not either compose with auxiliaries to form complex tenses. Complex Tenses in Modern Greek are formed by means of a different form, derived from the past tense's root together with a third person singular ending (with some exceptions), this form is not homophonous to the third person singular of the past tense because it lacks the temporal prefix (augment) /e/. However, the investigation of the

GERUNDS

(15) *To ksekinondas ine diskolo.
The starting is difficult

(16) * To ksekinondas, to opio theloume[7] ine diskolo.
The starting the which (we) want is difficult

(17) Milouse kitondas me astamatita.
he/she was talking looking at me all the time

(18) * echo/ime kitondas.
I have/be looking

PARTICIPLES

(19) O Xaroumenos ine efxaristos.
The happy/MASC is pleasant

(20) O Xaroumenos anthropos ine efxaristos.
The happy/MASC man is pleasant

(21) O Xamenos, o opios bori na ine opiosdipote, den xerete.
the looser/M the which can C be anyone neg rejoice

(22) Milouse arnoumeni na me kitaksi.
she was talking refusing/F C at me look
She was talking refusing to look at me.

---

morphological properties of this form would take us too far astray from our initial purposes. I will thus leave it aside for the present paper.

[7] Here the modifier is a relative clause. Examples showing the gerund being modified by an adjective are not particularly illuminating since the gerund, uninflected for gender, would have to be modified by a third person neuter adjective, a form which, in Modern Greek, coincides with the adverb. Notice also that in (16) the presence (or absence) of the determiner *To* is irrelevant to the grammaticality of the sentence.

These examples show that the distribution of the gerund can be considered as a subset of the distribution of the participle. Participles are in principle categorially ambiguous in the sense that they can function either as verbs or as nouns or adjectives. The distribution of the gerund covers only one part, the verbal part, of the participle's distribution. Differently put, only example (22) is comparable to the examples (12)-(14) which show the distribution of gerunds.

3.2 The Structure of Gerund Clauses

The main question arising in connection with the internal structure of gerund clauses is their categorial status, this question will be shown to be of a major importance because it bears directly on the status of their subject. Gerund clauses seem to be CPs. In the following examples, cases of wh-extraction from within the gerund clause are shown.[8]

(23) Ti_i pinondas akouge mousiki?
what drinking (s)he listening music
What was she drinking while she listened to the music?

(24) Se pion milondas magireve?
To whom talking he/she was cooking
Who was she talking to while she was cooking?

(25) Pou kitondas sou milouse?
where looking to you was talkng
Where was she looking while she was talking to you?

In (23) and (24) argument extraction is displayed (direct and indirect object respectively) and (24) shows adjunct extraction.[9] These examples

[8] All the sentences involving extraction are somehow marginal in acceptability. Their marginal status is to be imputed to the well known fact that extraction out of an adjunct is generally marginal. The relevance of these examples will become more evident when they are compared with extraction out of participles, which is impossible.

[9] There is of course the possibility of leaving the wh in situ, which is also more natural (but see note 8):

(i) Pinondas ti akouge mousiki

show that a Spec, CP position is available and can be targeted by wh-movement. On the other hand, similar examples involving clearly participial forms (i.e. inflected for number, gender, person, and Case) are sharply ungrammatical:

(26) * Ti ton thimasai arnoumeno.
what him remember/you refusing/3/S/M/ACC

(27) * Pou ton ides vriskomeno.
where him saw/you being/M/S/3/Acc

(28) ??Pou ton ides eksaskoumeno?
where him you saw exercising
Where did you see him exercising?

There is a difference in acceptability between (26)-(27) and (28) which is much better. The reason for this asymmetry between argument/adjunct extraction is obscure. Notice that the locative in (27) behaves more like an argument of the verb *vriskomai* 'being in a location'.[10]

These examples suggest that, contrary to gerunds, participial clauses are bare IPs (or even VPs). This observation is particularly significant for the subpart of the distribution of participles that coincides with the distribution of gerunds, i.e. when participles function as verbs.[11]

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drinking what was/(s)he listening to the music
(ii) Milondas se pion magireve
talking to whom was/(s)he cooking
(iii) kitondas pou sou milouse
looking where to you was (s)he talking
(S)he was talking to you looking where?

[10] This type of asymmetries suggests that the lexical semantics of each item have some influence, but I will not pursue this path further.

[11] It is rather interesting to note that for some obscure reason the option of long wh-movement, widely attested in pro-drop languages such as Modern Greek, is not available here.

3.2.1 Temporal Interpretation of Gerunds

Gerunds are further opposed to participles in that, aspectually, they are uniformly imperfectives whereas participles are perfectives.

(29) Pinondas arga to krasi milouse gia glossologia.
drinking slowly the wine he was talking about linguistics

(30) diavaze kapnizondas astamatita.
he was reading smoking without stopping

(31) * Arnoumenos arga tin prosfora efige.
Refusing/3/S/M/Nom slowly the offer left/he

(32) Eksaskoumenos astamatita katafere to skopo tou.
exercising/MASC all the time he reached the aim his

The perfective/imperfective difference can also be cast in terms of definiteness/indefiniteness. I have proposed in Tsoulas (1994a, 1994b, 1995) that tense is also subject to the definiteness/indefiniteness distinction. Furthermore, I have proposed that this distinction should replace the classical finite/non-finite distinction, since it is now widely accepted that non-finite verbal forms only lack morphological temporal specifications, while semantically still they contain information pertaining to temporal interpretation. This theory has interesting predictions in that it parallels clausal and nominal (DP) constituents in yet one more respect. Informally in the case under examination, the gerund is indefinite in that it does not refer to a precise point or interval in time whereas participles do In the grammatical example (32) the temporal reference of the participle can be characterised as a closed temporal interval located at some time before the occurrence of the event denoted by the main verb. By contrast, gerunds denote open intervals with respect to the main verb. If we consider gerunds as indefinites, this constitutes an additional explanation for the extraction data in the preceding paragraph, namely, indefinites permit extraction while definites disallow it (see Ross 1968, Manzini 1993 among others).

3.2.2 Temporal Scope Ambiguities with Gerund Clauses
In this subsection I will present some more evidence for the CP status of gerund clauses. This evidence also bears on the issues of control mentioned in the introduction. This evidence involves temporal scope ambiguities and binding with gerunds. Consider the following sentences:

(33) Tremondas apo to fovo tou o Giannis lei oti o Kostas efige.
trembling by the fear his the G. says that the K. left
Giannis says that Kostas left trembling from fear.

(34) Vlepondas ta ligosta malia tou o Giannis ipe
Seeing the few hair his the G said
oti o Kostas epathe egefaliko.
that the K. had a stroke
Giannis said that Kostas had a stroke seeing his thining hair.

(35) Trogondas ti soupa tou o Giannis ipe oti o Kostas kaike.
Eating the soup his the G said that the K. was burned
Giannis said that Kostas burned himself while eating his soup.

(36) Ida to Gianni vgainondas apo to spiti (tou)
Saw/I the G. coming out of the house (his)
prin na ton skotosi o Kostas.
before C him killed the K
I saw G. getting out of his/the house before K. killed him.

(37) Ida ton Kosta na skotoni to Gianni vgainondas apo to spiti (tou).
Saw/I the K C kill the G coming out of the house (his)
I saw Kostas killing Giannis while getting out of the/his house.

(38) Ematha oti o Kostas skotose to Gianni vgainondas apo
Learned/I that the K. killed the G coming out of
to spiti tou prin mathefti o tsakomos tous.
the house his before becomes-known the fight their
I learned that K killed G getting out of the/his house before
their fight becomes known.

Examples (33)-(38) show that the gerund can be construed with each of the clauses in the complex structure. For example, (38) can have the following interpretations:

(i) I heard, when I was getting out of the/his house that Kostas killed Gianni, before their fight becomes known.
(ii) I heard that Kostas, as he (Kostas) was getting out of the/his house he (Kostas) killed Gianni, before their fight becomes known.
(iii) I heard that Kostas killed Gianni when he (Gianni) was getting out of the/his house before their fight becomes known.

Interestingly enough the gerund clause cannot be associated with the *before*-clause in this structure. We will be merely noting this fact for the moment, we shall return to it shortly.

In general, it is natural to suppose that the adjunction site is what determines the interpretation. In other words, the gerund clause must be adjoined to a given T (or I) node in order to be able to modify that node. However, we see that the same surface string can yield several interpretations. The question is how these interpretations are to be derived in a framework like the minimalist program (Chomsky 1993, 1994, 1995), where one of the major predictions of the theory is that optionality should be banned. One way to deal with this problem is to suppose that the entire adjunct is covertly moved and readjoined to some other position. One may, however, legitimately ask what motivates such a movement, since all movement operations must be driven by the need to check some morphological feature. It is difficult to imagine what that feature could be. Another way around this problem that comes to mind derives from Geis' (Geis 1970) and Larson's treatment of temporal prepositions as involving silent temporal operators that need to be moved to the COMP position of the clausal complement of the preposition.[12] Consider for example a sentence containing a *before*-clause:

[12] Cited by Johnson 1988, who applies this analysis to clausal gerunds in English.

(39) Valerie arrived before you said she had.[13]

This sentence is ambiguous. It has one meaning corresponding to (i) and one meaning corresponding to (ii).

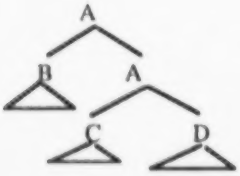
(i) Valerie left before the time of your saying that she had.
(ii) Valerie left before the time you said she had left at.

According to Larson, as cited by Johnson (1988), the ambiguity arises because in these clauses there are empty temporal operators. These operators, once moved to the appropriate position, bind a variable located either in the matrix (i) or in the embedded clause (ii). This analysis, since it is based on movement, has the major prediction, as noted by Larson and Johnson, that the interpretation of this type of sentences would be sensitive to island effects (see Johnson 1988 for the relevant examples and discussion). This prediction, which is indeed a true one, raises a major problem for the syntax of Modern Greek gerunds. If we assume that a similar analysis can be proposed for gerunds in Modern Greek then movement of the operator out of the adjunct would violate the adjunct condition and yield ungrammatical results. In the examples (33)- (38) the gerund always has scope over one of the clauses in the structure excluding all the others. This fact is an argument in favour of the analysis in terms of movement of a covert operator in the sense that it makes it necessary to understand scope in this particular context as the relation between an operator and the variable it is associated with (i.e. that it binds), rather than in terms of C-command or any other command-type relation. This fact is of a crucial importance given the theory of adjunction we are adopting in this work, to which I turn in a moment. Suppose that this analysis is correct and Modern Greek gerunds truly contain a phonologically null temporal operator (a silent *when or while*); how can we account for the improper movement of the operator out of the gerund? In order to answer this question let us turn first to the nature of structures formed by adjunction. Kayne (1994) proposes that there is no principled difference between a specifier and an adjoined element, under this

[13] Example adapted from Johnson 1988.

assumption and given a phrase marker like (40) where B is adjoined to A, if B represents the gerund clause of our examples and A is, say, a VP or IP, then no locality problem arises if we move the operator to the first superordinate CP position.[14]

(40)



This type of movement requires that the B adjunct be a CP projection, for, otherwise the derivation would be ruled out as an ECP violation while here antecedent government is satisfied. It is also interesting to observe that even in (41) the gerund can still be associated with the matrix clause, in the interpretation that the *learning* event takes place when the *learner* steps out of her house.[15]

(41) Ematha oti o Kostas ipe oti o Nikos skotose to Gianni
Learned/I that the K. said that the N. killed the G.
vgainondas apo to spiti.
coming out of the house
I learned that Kostas said that Nikos killed Gianns while getting out of the house.

If my analysis so far is correct we have to assume that only the operator itself can bind an event variable, and, crucially, not its trace

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[14] Recall that we analyse gerunds as indefinites, thus allowing material from within the gerund clause to be extracted.

[15] Predictably, this reading is somewhat more difficult to obtain. It is noteworthy that, in general, speakers require a clear pause before the adjunct in that reading, this requirement is weakened though if the choice of lexical items is such that the association of the gerund with another clause is unlikely.

(t_{OP}) since to satisfy the ECP the operator has to move stepwise through the specifiers of each of the embedded CPs. If t_{OP} were to be a potential binder for the event variable of each verb, the whole structure would be uninterpretable and the derivation would crash as a violation of the bijection principle of Koopman and Sportiche(1984).[16]

Returning to our example (38), under this analysis this example should be problematic since under our assumption that there is no principled, configurational difference between adjuncts and specifiers, nothing would prevent the operator contained in the gerund clause from moving to the specifier of the clausal complement of the preposition *prin*. Recall however that the analysis proposed here crucially assumes that these temporal operators are also present in other temporal clauses, including *before*-clauses. Therefore it is impossible for the temporal operator of the gerund clause to move into the position that is already occupied by the operator originating in the *prin*-clause. Consequently in sentence (38) the only interpretation of the *prin*-clause with respect to the matrix is a narrow scope interpretation, which means that the time that *prin* 'before' compares can only be construed with one of the embedded clauses but crucially not with the gerund or the matrix clause.

3.2.3 Manner and Modal Gerunds

The analysis presented so far covers mainly temporal (and aspectual) gerunds. Manner gerunds behave in almost the same way. Consider (41) in a manner reading of the gerund. Suppose that (41) is uttered in order to describe a particular scene of a gang fight where Nikos killed Gianni as he (Nikos) was shooting his way out of the house. I propose that this interpretation will not be merely the result of the fact that the gerund is adjoined to the lowest VP but because the temporal operator will move to the Spec of the most deeply embedded CP and no further up. Strictly speaking, these should be considered as two relatively independent processes. For one thing, the gerund has a specific dependent temporal interpretation and this must somehow be accounted

[16] This is quite natural. The operator and its trace are non distinct under the copy theory of movement, since they share the same index.

for.[17] Its adjunct status requires a different mechanism from those given in Tsoulas (1994a, 1994b) for the interpretation of indefinite clausal constituents. The data examined there involved, crucially, sentential complements. Thus, although the adjunction site is still crucial to the interpretation, it is the temporal operator that determines in a complex structure with respect to which such adjunction site the gerund clause will be interpreted.[18] Consider now (42) in which the gerund is clearly denoting manner:

(42) Ematha oti o Kostas ipe oti o Nikos skotose to Gianni
I learned that the K. said that the N. killed the/Acc G.
pirovolondas ton.
shooting him
I learned that Kostas said that Nikos killed Giannis shooting him.

---

[17] An Indefinite one as we said above. The morphological expression of the temporal indefiniteness in this case is quite a distinct matter. Along the lines of Tsoulas 1994a, if the generalisation concerning the morphological realisation of temporal indefiniteness, is correct, we infer from the existence of special bound morphology on the verb, that the [-DEFINITE] feature is realised under I (or T). This generalisation states that temporal (clausal) indefiniteness can either be realised in I or in C and either as bound morpholgy on the verb or as an independent word, moreover whenever temporal indefiniteness is realised as a bound morpheme it is necessarily realised under I. These facts, in conjunction with the ones about temporal indefiniteness in French presented in Tsoulas 1994a, b, 1995 raise a serious problem, namely, it shows quite clearly that the morphological realisation site, differing between C° and I (T) is not really subject to parametric variation since the two options exist within the same language, French as well as Modern Greek. The reasons for this optionally I don't really understand for the moment. They might have to do with the availability of control into the indefinite clausal constituent, but even this line of reasoning is compromised by the Modern Greek data, since in Modern Greek control is available both in subjunctives (Indefiniteness in C) and Gerunds (Indefiniteness in I). I will leave the matter here for this paper and postpone a more detailed examination for further research.

[18] Semantically this account is also supported because of its compositionality.

It could be objected that in this case the previous account somehow fails to capture the fact that the gerund can only be associated with the lowest VP. In a way, it is entailed by the lexical meaning of each item that the gerund says something about the manner in which the killing took place. This is not strictly true however, it is also conceivable that the clitic pronoun *ton* does not in fact refer to the DP *to Gianni* (the killed man) but rather it picks out some other antecedent from the preceding discourse. In this case, assuming for concreteness that the temporal operator has moved to the [Spec CP] of the matrix, the intended meaning is that the speaker learned about the facts reported *when* she was shooting someone. This becomes even clearer in (43).

(43) Akousa oti o Kostas ipe oti o Nikos skotose to Gianni
Heard/I that the K. said that the N. killed the G.
pirovolondas tin.
shooting her

The replacement of the masculine *ton* by a feminine form prevents its association with any of the DPs present in the sentence. (43) remains however grammatical, within, of course, the appropriate context.

The same considerations apply also to modal gerunds though the facts get somewhat more complicated in this case, for reasons I don't fully understand. Consider the following examples (partly adapted from Stump 1985). In this set of examples we show Modal gerundival clauses adjoined to various positions in the complex structures. Interestingly, the temporal patterns shown are not homogeneous. They differ in that the gerund clause in the examples (48)-(52) cannot be freely associated with any of the other clauses in the complex structure.

(44) forondas afta ta rouha trelene olo ton kosmo.
wearing these the clothes he/She was driving mad all the people
Wearing this outfit (s)he was driving everybody crazy.

(45) Akousa oti o Kostas ipe oti o Nikos itan sigouros oti
Heard/I that the K. said that the N. was sure that
forondas afta ta rouha tha trelenotan olos o kosmos.
wearing these the clothes would be driven mad all the people
I heard that Kostas said that that Nikos was sure that wearing this outfit, he would drive everybody mad.

(46) Pernondas to farmako se kanoniki dosi,
Taking this drug in normal dose
vlepis grigora apotelesmata.
see/you quick results
You see prompt results if you take this drug in normal dose.

(47) Vlepis grigora apotelesmata,
See/you quick results
pernondas to farmako se kanoniki dosi.
taking this drug in normal dose
You see prompt results if you take this drug in normal dose.

(48) Akousa oti o Kostas ipe oti o Nikos itan sigouros oti
Heard/I that the K. said that the N. was sure that
Pernondas to farmako se kanoniki dosi,
taking the drug in normal dose
ta apotelesmata ine theamatika.
the results are spectacular
I heard that Kostas said that Nikos was sure that you see prompt results if you take this drug in normal dose.

(49) Echondas makria heria o Nikos ftanei efkola to tavani.
Having long arms the N. reaches easily the ceiling
Having long arms Nikos reaches easily the ceiling

(50) *O Nikos ftanei efkola to tavani, echondas makria heria.
The N. reaches easily the ceiling, having long arms
Having long arms Nikos reaches easily the ceiling

(51) O Giannis kseri oti i Eleni ipe oti echondas makria heria
The G knows that the/fem E. said that having long
arms ftanei efkola to tavani.
reaches/she easily the ceiling
Giannis knows that Eleni said that that having long arms she
can easily reach the ceiling

(52) ?O Giánnis kseri oti i Eleni ipe oti ftanei efkola
The G. knows that the/fem E. said that reaches/she easily
to tavani, echondas makria heria.
the ceiling having long arms
Giannis knows that Eleni said that he/she reaches the ceiling
easily, having long arm.

Stump (1985) points out that a subclass (his *"Weak"* Adjuncts) of modal gerunds generally behave like *if*-clauses.[19] In the above examples these correspond to the sentences in (44)-(47). We are interested here in their temporal interpretation and whether the patterns observed above hold also of this type of gerund clauses. This is indeed the case in (44)-(47) the adjunct can be construed with each one of the clauses in the complex structure. From this point of view then we can consider them as *when*-clauses, containing an empty temporal operator. This is not the case however in the examples (48)-(52) (Stump's *"strong"* Adjuncts). In these cases the adjunct can only be construed with the lowest clause. This difference can be traced to the stage/individual level status of the predicate. From the perspective of temporal interpretation, this fact does not undermine our proposal that there is a temporal operator, since, as I pointed out earlier, we have to

[19] Stump's discussion is broader. He considers all sorts of free adjuncts, including gerunds, we restrict here our attention on adjuncts of the latter type and consequently adapt some of his observations. We must also point out that Stump does not use our Manner - Temporal - Modal distinction which is intended to make more apparent the import of the syntax, provided that each part of the distinction corresponds to a specific syntactic configuration. Stump's aim rather is to discuss the interpretation of the apparently homogeneous class of *free adjuncts* from the points of view of Modality, Tense, and Aspect.

account for the dependent temporal status of the adjunct. Stage-level predicates seem to allow the operator all possible scope options whereas individual-level predicates only admit narrowest scope. Consider however the effect of preposing the adjunct in (52) as in (53):

(53) Echondas makria heria, o Giannis kseri oti i Eleni ipe oti
having long arms the G. knows that the/fem E. said that
ftani efkola to tavani.
reaches/she easily the ceiling

In the most natural interpretation of (53) the adjunct is constructed with the matrix clause.[20] Consequently, in this case the operator must have wide scope. It seems that individual-level gerundival adjuncts have to be construed with the closest clause (downwards) rather than with the most deeply embedded as it would have been required if it had to take narrow scope. Somehow then this adjunct *belongs* to this clause in a more tight way. Why this is so? I want to propose here that in these cases the gerund is topicalised within its clause. It is moved to a Top position located at the complement of C. As it is natural, from this position the temporal operator, if this type of gerunds contain one, cannot move to the superordinate clause without violating the ECP. This proposal naturally explains some of the effects of the postposition of the adjunct as in (50). Assuming that the Top position is normally to the left of IP as shown also in Tsimpli (1992), (48) is ruled out as ungrammatical by the fact that the adjunct fails to be topicalised.[21] The

[20] It should be noted that (51) is judged somewhat strange by some speakers (including myself). I think this relative deviance is accountable on the nature of the predicate of each of the two clauses. The matrix predicate is stage level whereas the predicate of the embedded clause is individual level. Due partly to the embedded tense (habitual present) the embedded clause is interpreted as a generic sentence. Consequently, the modal gerund is more 'naturally' associated with the embedded rather than with the matrix, contrary to what is required by its position.

[21] Whether topicalisation involves movement or not is a question I will not address here. I will follow Chomsky 1977, Cinque 1991, Tsimpli 1992 in assuming that topicalised phrases are base-generated to their surface position, contrary to focused elements. My analysis would also be compatible with a movement approach to topicalisation if one wants to

question that this analysis raises is why only this type of gerund-adjuncts (strong adjuncts) must undergo topicalisation. Unfortunately I don't have a satisfactory answer to this question for the moment. Tentatively, I would like to suggest, as a first approximation, that the reason for this might have something to do with the fact that they derive from individual-level predicates whose interpretation is independent from any time intervals. They are somehow presupposed as topics generally are. Further refinements to this proposal are, no doubt, necessary. Space limitations prevent me from discussing this proposal further and I leave it for future research.

To sum up, the syntactic behaviour of Modern Greek gerunds does not exactly parallel their semantic properties. They do not divide, syntactically into manner, temporal, and modal. Manner and temporal gerunds pattern in the same way as far as temporal interpretation is concerned and are opposed to modal gerunds.[22] The former show a considerable liberty in their temporal interpretation, which we accounted for by means of an abstract operator, whereas the latter are much more restricted in their scope options. The reason for this, I argued, is that they are topicalised in their clause.

4. Control in Gerunds

4.1 ECM, Argumenthood and the Subject of Gerunds

In this section I want to examine some issues arising with respect to the determination of the reference of the subject of gerund clauses in Modern Greek. Lexical subjects are generally not licensed in Modern Greek gerunds. As we saw above, gerund clauses can apparently never function as arguments. Therefore, it would be natural to suppose that they are never subject to Exceptional Case Marking. Therefore, even sentences like (54), which appear, *prima facie*, to be ECM structures

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argue that argument topicalisation is different from adjunct topicalisation, for reasons such as predication

22 Roughly speaking, this corresponds to Stump's Strong - Weak distinction.

have in fact to be distinct in some way or other from true ECM constructions.

(54) Thimamai ton Kosta odigondas to aftokinito.
Remember/I the K. driving the car
I remember Kostas driving the car.

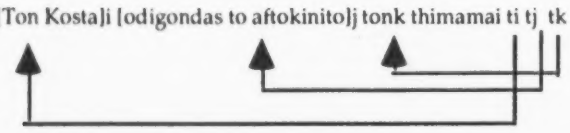
The DP *ton Kosta* can be cliticised on the main verb:

(55) Ton Thimamai odigondas to Aftokinito.
Him Remember/I driving the car
I remember him driving the car.

Furthermore, if the entire gerund, with the object, is topicalised then the object must obligatorily be linked to a resumptive preverbal clitic on the main verb ((56) and its schematic representation in (57)).[23] We can postulate that the clitic has moved to the preverbal position from its basic post-verbal position. This must be so since the only context in Modern Greek in which postverbal clitics are found is imperatives.

(56) Ton Kosta odigondas to aftokinito ton thimamai.
The K. driving the car HIM remember/I

(57)



Ton in (56) and (57) is the resumptive pronoun that the topicalised element is linked to. These can be considered as clitic doubling constructions.

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[23] This is the standard pattern of Topicalisation in Modern Greek. See also Tsimpli 1992.

There are however some more difficult cases which tend to suggest that the DP object may in fact also be part of the gerund clause. Consider first, imperatives:

(58) a Ton Kosta odigondas to aftokinito thimisou.
The/Acc K driving the car remember/imp

b Ton Kosta odigondas to aftokinito thimisou ton.
The/Acc K. driving the car remember/imp him

c Ton Kosta odigondas to aftokinito thimisou to.
The/Acc K driving the car remember/imp it

d Ton Kosta thimisou ton odigondas to aftokinito.
The/Acc K. remember/imp him driving the car

Imperatives, which are the only context where the resumptive clitic could appear post-verbally, in fact show a different behaviour. In (58a) it is clear that what has been topicalised is one constituent, namely, the gerund clause. (58b) is what the sentence would have been had the only topicalised constituent been the object. Finally (58c) shows that the only way to express (58a) and still have a resumptive postverbal clitic would require the latter to be in the neuter form *to* 'it', corresponding to the meaning in (58e).

(58) e Remember the event (situation) in which Kostas was driving the car.

(58d) shows topicalisation of the object alone leaving the entire gerund clause behind. The following examples raise also the same problem:

(59) Ton Kosta odigondas to aftokinito (ton) ida ke trelathika.
The/Acc K driving the car (him) saw/I and went/I mad
I saw Kostas driving the car and went mad.

(60) Ton Kosta magirevondas (ton) thimithika ke eskasa sta gelia.
The/Acc K. cooking (him) remembered/I and burst/I in laughs
I remembered Kostas cooking and laughed.

These sentences show that, at least in some sense, our initial assumption, which is also the widely accepted view, that gerunds are always adjuncts and not subject to ECM is not accurate and must be revised in order to account for this restricted argument status of gerund clauses. It is restricted in the sense that only in some contexts, namely as complements to verbs selecting indefinite clausal complements, can they act as arguments.[24] The account of ECM that I am adopting here is the one presented in Tsoulas (forthcoming), and briefly outlined below: I take ECM to involve raising of the subject of the non-finite, Indefinite clausal complement to the specifier of the higher AgrO where it can check accusative Case. In order for this movement to be possible we must ensure that the Minimal Domain which this DP belongs to is properly extended. On the other hand I consider the selection of an Indefinite clausal complement as a marked selectional option,[25] therefore this feature (a head selects for a feature in the head of its complement) must be checked off. Checking the [+Indefinite] feature of the C head requires it to raise and adjoin to the selecting head, in a way similar to that in which Verb raises to T. It follows that the relevant Minimal Domain is extended accordingly, thus permitting the lower subject to raise to the specifier of AgrO.[26]

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[24] It is precisely in those contexts in which they can alternate with subjunctives - the other type of indefinite clause one can find in Modern Greek. This is not true however cross-linguistically. It is not, for example, generally true for English. I have no explanation for this difference for the moment but I think it has to do with the fact that instead of infinitives Modern Greek possess only subjunctives, contrary to English. But I will not pursue this question any further here.

[25] I am considering any functional feature that has to be explicitly stated in the lexical entry of an item as a marked one.

[26] See Tsoulas 1995 for further technical details of this analysis.

Of course, in the vast majority of cases, when no lexical subject can be licensed in the adjunct the subject of the gerund is PRO.[27]

4.2 The Influence of the Object

I want now to turn back to the contrast mentioned in the introduction and consider the shifting in the control pattern in the light of the above discussion, consider again examples (1) and (2) repeated here:

(1) I Maria$_i$ ide to Gianni$_j$ [$_{CP}$ PRO*$_{i/j}$ zografizondas ena dendro].
The Maria saw the Gianni painting a tree
Maria saw Gianni while he was painting a tree.

(2) I Maria$_i$ ide to Gianni$_j$ [$_{CP}$ PRO$_{i/*j}$ zografizondas to dendro].
The Maria saw the Gianni painting the tree
Maria saw Gianni while she was painting the tree.

Given the above discussion it is natural to explain the quite puzzling contrast between (1) and (2) in terms of ECM, that is in (1) the verb *ide* Exceptionally Case marks inside the gerund clause, whereas this is somehow impossible in (2). I will argue that it is the presence of a definite object in (2) that is responsible for this situation. Recall that ECM depends on the indefinite nature of the clausal constituent. If the constituent is definite it is an absolute barrier to government and consequently ECM is precluded.[28] Thus, my proposal consists in the claim that the definiteness of the object is transferred to the gerund and furthermore to the entire CP. Krifka (1992) proposes a similar analysis of the *trade off* of grammatical features between verbal and nominal predicates affecting the temporal constitution of the sentence. As we saw at the beginning of this paper, gerunds differ from participles in several respects. We then considered participles as definites. Notice also

[27] Although the presence, or absence, of PRO from the inventory of Modern Greek's grammatical categories is a rather controversial matter, no one, to the best of my knowledge, has ever suggested that PRO could be dispensed with in these constructions.

[28] Put in Minimalist terms, raising of the embedded subject to the superordinate Spec AgrO for accusative Case checking is impossible.

that there are no active participles, morphologically distinguished as such, in Modern Greek. Transfer of a [+DEFINITE] feature to the gerund can be said to transform it into a more participle-like form, though somehow defective. This proposal, although very tentative and in need of considerable refinement, seems however quite accurate in that it also reflects the diachronic derivation of the gerund, which has presumably resulted in a form of ambiguity in the specifications of the *-ondas* morpheme.

One possible objection to this analysis could be that apparently conflicting predictions are made by it and our analysis of the temporal interpretation of gerunds in terms of movement of an abstract operator. In fact the predictions are not conflicting because in one of those cases the gerund clause is an argument whereas in the other it is an adjunct. Of course, the question that still remains open is what happens with participles that are themselves adjuncts; also, why is it that only subject control is available in (2)? The answer to the latter question lies within the general mechanisms of Control theory. I would like to adopt here Williams' (1992) suggestion that in several cases of adjunct control, the controller is identified as the *logophoric centre of the sentence* in the case of (2) the perceiver is more likely to be the logophoric centre of the sentence in the sense of Sells (1987), and consequently the controller.

4. Conclusion

In this paper I have examined, as space limitations permitted, the structure and functioning of Modern Greek Gerundival constructions. I first argued that there are clear differences between gerunds and participles. I considered then issues concerning the temporal interpretation of gerunds and gave an account of it postulating the existence of a covert temporal operator akin to the one used by Geis (1970) for temporal prepositions in English, movement of this operator determines the clause with which the gerund will be associated. I assumed Kayne's (1994) theory of adjunction, which does not distinguish configurationally between adjunct phrases and specifiers in order to void a potential violation of the adjunct constraint (ECP). This analysis, independently, constitutes evidence for a disjunctive formulation of the ECP. I then considered issues of Control with

gerunds and concluded that although apparently restricted to adjoined positions, gerunds can also be arguments and by virtue of their indefinite nature, they permit ECM. This partly resolves the problem raised by the sentences (1) and (2). On the other hand, following Krifka (1992) I argued that there is some feature transfer from the object to the gerund, which turns it to a more definite, participle-like constituent (but see note 25) which accounts for its control properties. The analysis presented in this paper represents further evidence for the Definite/Indefinite distinction at the clausal level. It should be noted however that the rather intuitive account of the properties of temporal/clausal indefiniteness given in this paper fails to do full justice to the linguistic reality it is supposed to account for.[29] In fact, temporal indefiniteness turns out to be much more complex than this intuitive account suggests. It also raises nontrivial questions, left untouched in this paper, concerning the representation of indefiniteness temporal or otherwise. Crucially, it sheds doubt on the widely accepted DRT idea of *Indefinites as variables* and it is possible that a detailed account of temporal indefiniteness will lead us to abandon this idea.[30] Additional reasons for such a move, from a Situation Semantics point of view, can be found in Cooper and Kamp (1991).

There are of course several other questions left open as indicated in the course of the paper. I leave all these questions for further research.

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[29] See my 1994a, b, and forthcoming for some further details.

[30] However, Manzini 1994 presents ideas very similar to the ones presented in this paper and in Tsoulas 1994a, b and her analysis is fully cast in the framework of Heim's 1982 analysis of Indefinites-as-variables.

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